

International Crystal Mfg. Co., Inc.  
10 North Lee  
Oklahoma City, Oklahoma 73102

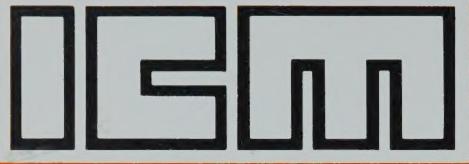


# INTERNATIONAL CRYSTALS & KITS

- OSCILLATORS
- RF MIXER
- RF AMPLIFIER
- POWER AMPLIFIER

KIT  
ASSEMBLY

A large, stylized word 'KIT' is positioned above the word 'ASSEMBLY'. Both words are written in a bold, blocky font where each letter is filled with a diagonal hatching pattern of orange and black triangles. The letters are outlined in black.



The items listed on these pages are intended to aid the user of quartz crystals in the construction of experimental and operational circuits. Some items are available in kit form and other units are complete for production use.

In addition to the .02% calibration tolerance crystals, International supplies a complete line of quartz crystals for general purpose applications as well as crystals for specific communication equipment. Crystals can be supplied to your specific load capacitance requirements and selected holder and temperature specifications.

All International products carry a six digit Catalog Number. A detailed discussion of the catalog number system is included with the full ICM Catalog Information. When ordering, the use of Catalog Numbers will expedite the handling of your order.

Inquiries and correspondence may be addressed to:

ICM Customer Service Department  
Post Office Box 32497  
Oklahoma City, OK 73132

## .02% CALIBRATION TOLERANCE **EXPERIMENTER CRYSTALS**

(HC 6/U Holder)

### CAT. NO. SPECIFICATIONS

031080	3 to 20 MHz .02% calibration— For use in OX OSC LO. Specify when ordering.	\$ 5.95 ea.
031081	20 to 60 MHz .02% calibration— For use in OX OSC HI. Specify when ordering.	\$ 5.95 ea.
031300	3 to 20 MHz .02% calibration— For use in OF-1L OSC. Specify when ordering.	\$ 4.75 ea.
031310	20 to 60 MHz .02% calibration— For use in OF-1H OSC. Specify when ordering.	\$ 4.75 ea.

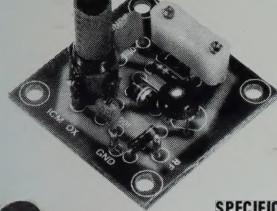
For other crystals see ICM Crystal Catalog information.

**SPECIFICATIONS:** International .02% Experimenter Crystal is available from 3,000 KHz to 60,000 KHz. Experimenter Crystals are supplied only in the HC-6/U holder with calibration  $\pm$  .02% to operate in the OX or OF-1 oscillator circuits. OF-1 uses special correlated crystal units. Check crystal catalog numbers listed with each oscillator.

**CONDITIONS OF SALE:** Crystals are guaranteed to operate only in International circuit or equivalent. Sold on a cash basis. Shipping and postage (inside U. S., Canada and Mexico only) will be prepaid by International.

**ORDERING INSTRUCTIONS:** (1) Order by catalog number. (2) Specify crystal frequency. (3) Enclose check or money order with your order. (4) Sold only under the conditions specified herein.

**FOREIGN ORDERS:** Prices quoted for U.S., Canada and Mexico orders only. Orders for shipment to other countries will be quoted on request. Minimum foreign order \$25.00 (exclusive Canada and Mexico).



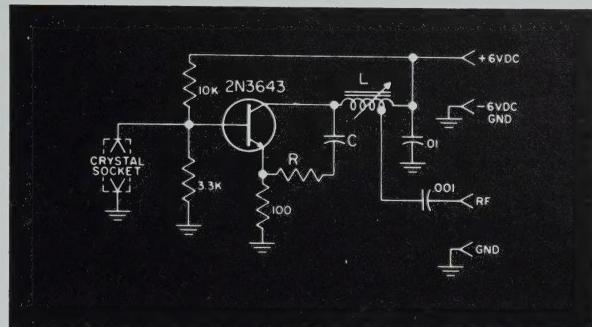
# OX

## OSCILLATOR

### SPECIFICATIONS

1. Frequency Range	LO Kit 3 to 20 MHz HI Kit 20 to 60 MHz
2. RF Output	2 volts rms into 50 ohms (min)
3. DC Power Required	6 volts at 20 mA (operates 4 to 9 volts)
4. Frequency tolerance with Cat. No. 031080 or Cat. No. 031081 crystals	.02%
5. Operating Temperature Range	0 to 50 Degrees Centigrade
6. Frequency Change with 1 Volt Supply Change	.001% (max)
7. Output Level Change with 1 Volt Supply Change	2 db (approx)
8. Size	1-1/2" x 1-1/2" x 1-1/4"
9. Mounting	4 holes with spacers or fits over 1-1/4" chassis hole
Complete (Less Crystal) LO Kit Cat. No. 035100 HI Kit Cat. No. 035101	\$4.95 4.95
Specify when ordering.	

The OX oscillator is an inductor/capacitor broadtuned circuit. Kit includes coils with adjustable core. In the fundamental range the circuit presents an approximate load of 100 pf to the crystal. In the overtone range the crystal operates at near series resonance.



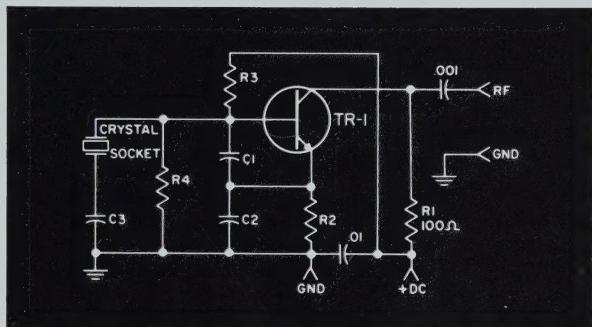
# OF-1

## OSCILLATOR

### SPECIFICATIONS

1. Frequency Range	LO - 2 MHz to 22 MHz (For Fundamental Xtal) HI - 18 MHz to 60 MHz (Overtone Xtal)
2. RF output	1 volt rms into 50 ohms (min)
3. DC power required	9 volts at 20 mA (operates 6 to 12 volts)
4. Frequency tolerance with OF-1 and Cat. No. 031300 or Cat. No. 031310 crystals	.02%
5. Operating temperature range	0 to 50 degrees centigrade
6. Frequency change with 1 volt supply change	.001% (max)
7. Output level change with 1 volt supply change	2 db (approx)
8. Size	1-1/2" x 1-1/2" x 1"
9. Mounting	4 holes with spacers or fits over 1-1/4" chassis hole
10. Matching Crystal Part No. For LO OF Osc.	Fundamental Cat. No. 031300 \$4.25 ea.
HI Of Osc.	Overtone Cat. No. 031310 \$4.25 ea.
Specify Crystal Part No. and Frequency.	
Complete Osc. Kit (less crystal) LO Kit Cat. No. 035108 HI Kit Cat. No. 035109	\$4.25 4.25

The OF-1 oscillator is a resistor/capacitor circuit providing oscillation over a range of frequencies by merely inserting the desired crystal. The crystal/oscillator combination is intended for general purpose use. The output is -10 dbm nominal. The output frequency may be adjusted slightly by changing the value of capacitor C3. In the fundamental range the circuit presents an average load of 24 pf to the crystal. In the overtone range the crystal operates near series resonance.



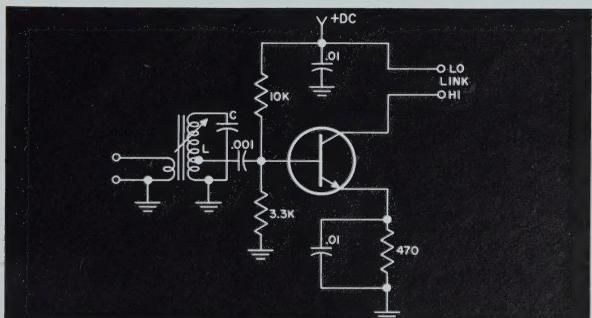
# SAX-1

## TRANSISTOR RF AMPLIFIER

### SPECIFICATIONS

1. DC Power Required	.6 to 12 volts dc @ 7 ma
2. Frequency Range	LO Kit 3 to 20 MHz HI Kit 20 to 170 MHz
3. Gain	15 db at 3 MHz 10 db at 150 MHz
4. Sensitivity	.Useful to 1 microvolt
5. Input Coupling	Low Impedance link
6. Output Coupling	Low Impedance link to next stage (link carries dc to collector)
7. Size	1-1/2" x 1-1/2" x 1"
8. Mounting	4 holes with spacers
Specify HI or LO kit when ordering.	
Complete	
LO Kit Cat. No. 035102	\$5.50
HI Kit Cat. No. 035103	5.50

The SAX-1 transistor rf amplifier is intended as a small signal amplifier to drive the MXX-1 mixer. The circuit has a single tuned input and a link output to the next stage. This output link carries dc to the collector of the amplifier transistor.





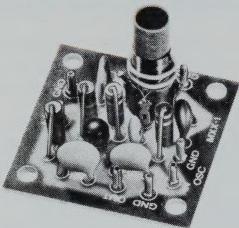
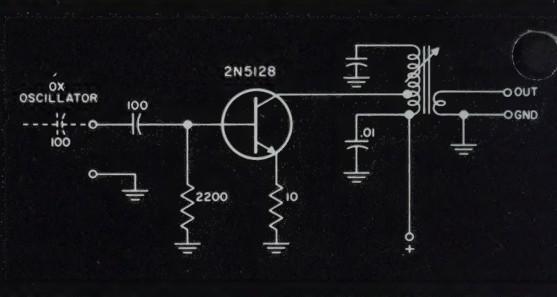
# PAX-1

## TRANSISTOR RF POWER AMPLIFIER

### SPECIFICATIONS

1. DC Power Required .....	6 to 12 volts dc @ 20 to 50 ma
2. Frequency Range .....	3 to 30 MHz
3. Output .....	30 mw to 200 mw depending on voltage
4. Drive Required .....	OX or OF oscillators
5. Output .....	Low impedance link
6. Harmonics .....	Down at least 20 db
7. Size .....	1-1/2" x 1-1/2" x 1"
8. Mounting .....	4 holes with spacers
Complete Kit Cat. No. 035104 .....	\$5.75

The PAX-1 transistor rf power amplifier is a single tuned output amplifier designed to follow the OX oscillator. Outputs up to 200 mw can be obtained depending on the frequency and the voltage. The amplifier can be amplitude modulated for low power communications.



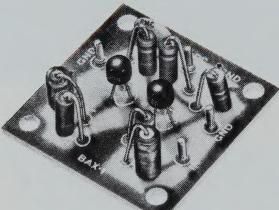
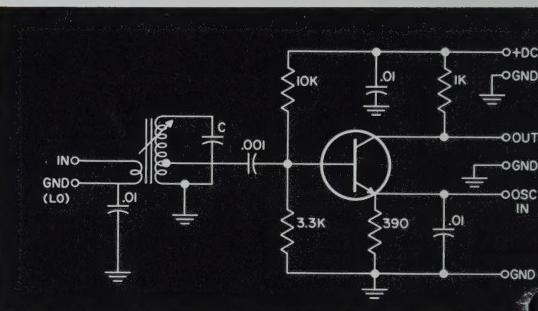
# MXX-1

## TRANSISTOR RF MIXER

### SPECIFICATIONS

1. DC Power Required .....	6 to 12 volts dc @ 7 ma
2. Frequency Range .....	LO Kit 3 to 20 MHz HI Kit 20 to 170 MHz
3. Conversion Gain .....	12 db at 3 MHz 6 db at 160 MHz
4. Sensitivity .....	Useful to 1 microvolt
5. Input Coupling .....	Low Impedance Link
6. Output Coupling .....	Untuned resistive
7. Size .....	1-1/2" x 1-1/2" x 1"
8. Mounting .....	4 holes with spacers
Specify HI or LO Kit when ordering.	
Complete	
LO Kit Cat. No. 035105 .....	\$5.50
HI Kit Cat. No. 035106 .....	5.50

The MXX-1 transistor rf mixer is a single tuned circuit intended for signal conversion in the 3 to 170 MHz range. The MXX-1 requires the OX oscillator for signal injection. Harmonics of the OX oscillator are used for injection in the 60 to 170 MHz range: Use the OX oscillator at  $\frac{1}{2}$  injection frequency from 60 to 120 MHz and  $\frac{1}{3}$  from 120 to 170 MHz.



# BAX-1

## BROADBAND AMPLIFIER 20 Hz to 150 MHz

### SPECIFICATIONS

1. Power .....	9 to 15 volts dc @ 10 ma
2. Frequency Range .....	20 Hz to 150 MHz
3. Gain at 1 MHz .....	30 db
Gain at 150 MHz .....	6 db
4. Response ref 1 mhz .....	down 6 db at 50 Hz $\pm 3$ db 100 Hz to 10 MHz down 15 db at 100 MHz down 24 db at 150 MHz
5. Operational Impedance .....	50 to 500 ohms
6. Noise .....	Less than 10 microvolts rf across 50 ohms; audio less than .0005 volts
7. Maximum Input Level .....	.01 volt ac
8. Output at Maximum Input (at 1 mhz) .....	50 ohms - .1 volt 500 ohms - .5 volt
9. Size .....	1-1/2" x 1-1/2" x 1"
10. Mounting .....	4 holes with spacers
Complete Kit, Cat. No. 035107 .....	\$5.75

International BAX-1 Broadband Amplifier is a general purpose unit which may be used as a tuned or untuned amplifier in rf and audio application. For example: when used as untuned rf pre-amplifier connect between antenna and receiver antenna posts. Ideal for SWL, Experimenter or Amateur applications. Easy to build.

